

Substitute for form 1449A/PTO

*Complete if Known*INFORMATION DISCLOSURE
STATEMENT BY APPLICANTS

(use as many sheets as necessary)

Sheet

1 of 7

| | |
|--------------------|----------------|
| Application Number | To be assigned |
| Filing Date | Herewith |
| Applicants | Surnilla; Roth |
| Group Art Unit | |
| Examiner Name | |

Attorney Docket Number 202-0402

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL* | Cite No. ¹ | DOCUMENT NUMBER | Kind Code ² (if known) | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------|-----------------------|-----------------|-----------------------------------|-----------------|---------------|---|
| | | 3,696,318 | | Boyd et al | 10-10-72 | |
| | | 3,969,932 | | Rieger et al | 07-20-76 | |
| | | 4,033,122 | | Masaki et al | 07-05-77 | |
| | | 4,178,883 | | Herth | 12-18-79 | |
| | | 4,251,989 | | Norimatsu et al | 02-24-81 | |
| | | 4,622,809 | | Abthoff et al | 11-18-86 | |
| | | 4,854,123 | | Inoue et al | 08-08-89 | |
| | | 4,884,066 | | Miyata et al | 11-28-89 | |
| | | 4,913,122 | | Uchida et al | 04-03-90 | |
| | | 5,009,210 | | Nakagawa et al | 04-23-91 | |
| | | 5,088,281 | | Izutani et al | 02-18-92 | |
| | | 5,097,700 | | Nakane | 03-24-92 | |
| | | 5,165,230 | | Kayanuma et al | 11-24-92 | |
| | | 5,174,111 | | Nomura et al | 12-29-92 | |
| | | 5,189,876 | | Hirota et al | 03-02-93 | |
| | | 5,201,802 | | Hirota et al | 04-13-93 | |
| | | 5,209,061 | | Takeshima | 05-11-93 | |
| | | 5,222,471 | | Stueven | 06-29-93 | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL* | Cite No. ¹ | Foreign Patent Document | | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------|-----------------------|-------------------------|---------------------|------------------|---------------|---|
| | | Office ³ | Number ⁴ | | | |
| | DE | 196 07 151 C1 | | Siemens AG | 07-10-97 | |
| | EP | 0 351 197 A2 | | Johnson Matthey | 01-17-90 | |
| | EP | 0 444 783 A1 | | Lucas Industries | 09-04-91 | |

EXAMINER

DATE CONSIDERED

*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁶Applicant is to place a check mark here if English language Translation is attached.

Complete if Known**INFORMATION DISCLOSURE
STATEMENT BY APPLICANTS***(use as many sheets as necessary)*

Sheet 2 of 7

| | |
|--------------------|----------------|
| Application Number | To be assigned |
| Filing Date | Herewith |
| Applicants | Sumilla; Roth |
| Group Art Unit | |
| Examiner Name | |

Attorney Docket Number 202-0402

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL [*] | Cite No. ¹ | DOCUMENT NUMBER | KIND CODE ² (if known) | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Rel Figures Appear |
|-------------------------------|-----------------------|-----------------|--------------------------------------|-----------------|------------------|--|
| | | 5,233,830 | | Takeshima et al | 08-10-93 | |
| | | 5,267,439 | | Raff et al | 12-07-93 | |
| | | 5,270,024 | | Kasahara et al | 12-14-93 | |
| | | 5,272,871 | | Oshima et al | 12-28-93 | |
| | | 5,325,664 | | Seki et al | 07-05-94 | |
| | | 5,331,809 | | Takeshima et al | 07-26-94 | |
| | | 5,335,538 | | Blischke et al | 08-09-94 | |
| | | 5,357,750 | | Ito et al | 10-25-94 | |
| | | 5,377,484 | | Shimizu | 01-03-95 | |
| | | 5,402,641 | | Katoh et al | 04-04-95 | |
| | | 5,412,945 | | Katoh et al | 05-09-95 | |
| | | 5,412,946 | | Oshima et al | 05-09-95 | |
| | | 5,414,994 | | Cullen et al | 05-16-95 | |
| | | 5,423,181 | | Katoh et al | 06-13-95 | |
| | | 5,433,074 | | Seto et al | 07-18-95 | |
| | | 5,437,153 | | Takeshima et al | 08-01-95 | |
| | | 5,448,887 | | Takeshima | 09-12-95 | |
| | | 5,450,722 | | Takeshima et al | 09-12-95 | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL [*] | Cite No. ¹ | Foreign Patent Document | | | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-------------------------|---------------------|--------------------------------------|------------------|------------------|---|
| | | Office ³ | Number ⁴ | Kind Code ⁵ (if known) | | | |
| | | JP | 2-207159 | | Toyota | 08-16-90 | |
| | | JP | 2-30915 | | Toyota | 02-01-90 | |
| | | JP | 2-33408 | | Toyota | 02-02-90 | |
| | | JP | 3-135417 | | Matsushita Elec. | 06-10-91 | |
| | | JP | 5-106493 | | Honda | 04-27-93 | |

EXAMINER**DATE CONSIDERED**

**Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider copy of this form with next communication to applicant.*

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 18 if possible.

**Applicant is to place a check mark here if English language Translation is attached.*

| | | | |
|---|---|--------------------------|----------------|
| Substitute for form 1449A/PTO | | <i>Complete if Known</i> | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANTS | | Application Number | To be assigned |
| <i>(use as many sheets as necessary)</i> | | Filing Date | Herewith |
| | | Applicants | Sumilla; Roth |
| | | Group Art Unit | |
| | | Examiner Name | |
| Sheet | 3 | of | 7 |
| | | Attorney Docket Number | 202-0402 |

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL [*] | Cite No. ¹ | DOCUMENT NUMBER | Kind Code ² (if known) | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Rel Figures Appear |
|-------------------------------|-----------------------|-----------------|--------------------------------------|-----------------|------------------|--|
| | | 5,472,673 | | Goto et al | 12-05-95 | |
| | | 5,473,887 | | Takeshima et al | 12-12-95 | |
| | | 5,473,890 | | Takeshima et al | 12-12-95 | |
| | | 5,483,795 | | Katoh et al | 01-16-96 | |
| | | 5,544,482 | | Matsumoto et al | 08-13-96 | |
| | | 5,551,231 | | Tanaka et al | 09-03-96 | |
| | | 5,577,382 | | Kihara et al | 11-26-96 | |
| | | 5,595,060 | | Togai et al | 01-21-97 | |
| | | 5,598,703 | | Hamburg et al | 02-04-97 | |
| | | 5,622,047 | | Yamashita et al | 04-22-97 | |
| | | 5,655,363 | | Ito et al | 08-12-97 | |
| | | 5,657,625 | | Koga et al | 08-19-97 | |
| | | 5,693,877 | | Ohsuga et al | 12-02-97 | |
| | | 5,713,199 | | Takeshima et al | 02-03-98 | |
| | | 5,715,679 | | Asanuma et al | 02-10-98 | |
| | | 5,724,808 | | Ito et al | 03-10-98 | |
| | | 5,732,554 | | Sasaki et al | 03-31-98 | |
| | | 5,735,119 | | Asanuma et al | 04-07-98 | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL [*] | Cite No. ¹ | Foreign Patent Document | | | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-------------------------|---------------------|--------------------------------------|-------------------|------------------|---|
| | | Office ³ | Number ⁴ | Kind Code ⁵ (if known) | | | |
| | | JP | 5-106494 | | Honda | 04-27-93 | |
| | | JP | 5-26080 | | Mitsubishi Motors | 02-02-93 | |
| | | JP | 62-117620 | | Nippon Shokubai | 05-29-87 | |
| | | JP | 6-264787 | | Nissan Motor | 09-20-94 | |
| | | JP | 62-97630 | | Nippon Shokubai | 05-07-87 | |

EXAMINER

DATE CONSIDERED

^{*}Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁶Applicant is to place a check mark here if English language Translation is attached.

| | | | | | |
|---|--|--|--|--------------------------|----------------|
| Substitute for form 1449A/PTO | | | | <i>Complete if Known</i> | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANTS <i>(use as many sheets as necessary)</i> | | | | Application Number | To be assigned |
| | | | | Filing Date | Herewith |
| | | | | Applicants | Sumilla; Roth |
| | | | | Group Art Unit | |
| | | | | Examiner Name | |
| Sheet 4 of 7 | | | | Attorney Docket Number | 202-0402 |

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL ¹ | Cite No. ¹ | DOCUMENT NUMBER | Kind Code ² (if known) | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-----------------|-----------------------------------|-----------------|---------------|---|
| | | 5,740,669 | | Kinugasa et al | 04-21-98 | |
| | | 5,743,084 | | Hepburn | 04-28-98 | |
| | | 5,746,049 | | Cullen et al | 05-05-98 | |
| | | 5,746,052 | | Kinugasa et al | 05-05-98 | |
| | | 5,752,492 | | Kato et al | 05-19-98 | |
| | | 5,792,436 | | Feeley et al | 08-11-98 | |
| | | 5,842,340 | | Bush et al | 12-01-98 | |
| | | 5,865,027 | | Hanafusa et al | 02-02-99 | |
| | | 5,970,707 | | Sawada et al | 10-26-99 | |
| | | 5,974,793 | | Kinugasa et al | 11-02-99 | |
| | | 5,983,627 | | Aslik | 11-16-99 | |
| | | 6,014,859 | | Yoshizaki et al | 01-18-00 | |
| | | 4,036,014 | | Ariga | 07-19-77 | |
| | | 4,964,272 | | Kayanuma | 10-23-90 | |
| | | 5,410,873 | | Tashiro | 05-02-95 | |
| | | 5,412,945 | | Katoh et al | 05-09-95 | |
| | | 5,419,122 | | Tabe et al | 05-30-95 | |
| | | 5,437,153 | | Takeshima et al | 08-01-95 | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL ¹ | Cite No. ¹ | Foreign Patent Document | | | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-------------------------|---------------------|-----------------------------------|-----------------|---------------|---|
| | | Office ³ | Number ⁴ | Kind Code ⁵ (if known) | | | |
| | | JP | 64-53042 | | Mitsubishi | 03-01-89 | |
| | | JP | 6-58139 | | Nissan Motor | 03-01-94 | |
| | | JP | 7-97841 | | Kazuhiko et al | 04-11-95 | |
| | | EP | 0 351 197 A1 | | Johnson Matthey | 01-17-90 | |
| | | EP | 0 503 882 A1 | | S. Takeshima | 09-16-92 | |

EXAMINER

DATE CONSIDERED

**Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider copy of this form with next communication to applicant.*

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁶Applicant is to place a check mark here if English language Translation is attached.

| | | | |
|---|------------------------|--------------------|----------------|
| Substitute for form 1449A/PTO | | Complaint if Known | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANTS | | Application Number | To be assigned |
| (use as many sheets as necessary) | | Filing Date | Herewith |
| | | Applicants | Surnilla; Roth |
| | | Group Art Unit | |
| Sheet 5 of 7 | Examiner Name | | |
| Sheet 5 of 7 | Attorney Docket Number | 202-0402 | |

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL ¹ | Cite No. ¹ | DOCUMENT NUMBER | Kind Code ² (if known) | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-----------------|-----------------------------------|------------------|---------------|---|
| | | 5,452,576 | | Hamburg et al | 09-26-95 | |
| | | 5,483,795 | | Katoh et al | 01-16-96 | |
| | | 5,626,014 | | Hepburn et al | 05-06-97 | |
| | | 5,626,117 | | Wright et al | 05-06-97 | |
| | | 5,713,199 | | Takeshima et al | 02-03-98 | |
| | | 5,715,679 | | Asanuma et al | 02-10-98 | |
| | | 5,722,236 | | Cullen et al | 03-03-98 | |
| | | 5,771,685 | | Hepburn | 06-30-98 | |
| | | 5,771,686 | | Pischinger et al | 06-30-98 | |
| | | 5,778,666 | | Cullen et al | 07-14-98 | |
| | | 5,802,843 | | Kurihara et al | 09-08-98 | |
| | | 5,803,048 | | Yano et al | 09-08-98 | |
| | | 5,832,722 | | Cullen et al | 11-10-98 | |
| | | 5,938,715 | | Zang et al | 08-17-99 | |
| | | 5,974,788 | | Hepburn et al | 11-02-99 | |
| | | 5,974,791 | | Hirota et al | 11-02-99 | |
| | | 5,922,142 | | Pott | 11-30-99 | |
| | | 5,996,338 | | Hirota | 12-07-99 | |

FOREIGN PATENT DOCUMENTS

| EXAMINER INITIAL ¹ | Cite No. ¹ | Foreign Patent Document | | | NAME | DATE MM-DD-YY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|-------------------------------|-----------------------|-------------------------|---------------------|-----------------------------------|----------------|---------------|---|
| | | Office ³ | Number ⁴ | Kind Code ⁵ (if known) | | | |
| | | EP | 0 580 389 A1 | | Toyota | 01-26-94 | |
| | | WP | 98/27322 | | Ford Motor Co. | 08-25-98 | |
| | | JP | 7-166851 | | Toyota | 08-27-95 | |

EXAMINER

DATE CONSIDERED

¹Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 608; Draw line through citation if not in conformance and not consider copy of this form with next communication to applicant.

²Unique citation designation number. ³Applicant is to place a check mark here if English language Translation is attached. ⁴Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁶Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

⁷Applicant is to place a check mark here if English language Translation is attached.

| | | | |
|---|---|--------------------------|----------------|
| Substitute for form 1449A/PTO | | <i>Complete if Known</i> | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANTS <i>(use as many sheets as necessary)</i> | | Application Number | To be assigned |
| | | Filing Date | Herewith |
| | | Applicants | Surnilla; Roth |
| | | Group Art Unit | |
| | | Examiner Name | |
| Sheet | 6 | of | 7 |
| | | Attorney Docket Number | 202-0402 |

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

EXAMINER

DATE CONSIDERED

***Examiner:** Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

*Applicant is to place a check mark here if English language Translation is attached

| | | | | |
|--|--|--------|--------------------------|----------------|
| Substitute for form 1449A/PTO | | | Complete if Known | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT | | | Application Number | To be assigned |
| <i>(use as many sheets as necessary)</i> | | | Filing Date | Herewith |
| | | | Applicants | Surnilla; Roth |
| | | | Group Art Unit | |
| | | | Examiner Name | |
| Sheet | | 7 of 7 | Attorney Docket Number | 202-0402 |

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

| EXAMINER INITIAL* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published |
|-------------------|-----------------------|--|
| | | JOE THEIS et al, "An Air/Fuel Algorithm To Improve The NO _x Conversion Of Copper-Based Catalysts", SAE Technical Paper No. 922251, October 19-22, 1992, pp. 77-89. |
| | | Y. KANEKO et al, "Effect of Air-Fuel Ratio Modulation on Conversion Efficiency of Three-Way Catalysts", INTER-INDUSTRY EMISSION CONTROL PROGRAM 2 (IIEC-2) PROGRESS REPORT NO. 4, SAE Technical Paper No. 780607, June 5-9, 1978, pp. 119-127. |
| | | ALAN F. DIWELL, "Engineered Control Strategies For Improved Catalytic Control of NO _x In Lean Burn Applications", SAE Technical Paper No. 881595, 1998, pp. 1-11. |
| | | ALLEN H. MEITZLER, "Application of Exhaust-Gas-Oxygen Sensors to the Study of Storage Effects in Automotive Three-Way Catalysts", SAE 800019, February 25-29, 1980. |
| | | W.H. HOLL, "Air Fuel Control to Reduce Emissions, I. Engine-Emissions Relationships", SAE 800051, February 25-29, 1980. |
| | | WEI-MING WANG, "Air-Fuel Control to Reduce Emissions, II. Engine-Catalyst Characterization Under Cyclic Conditions", SAE 800052, February 25-29, 1980. |
| | | CHRISTOPHER D. DE BOER et al, "Engineered Control Strategies for Improved Catalytic Control of NO _x in Lean Burn Applications", SAE 881595, October 10-13, 1988. |
| | | TOSHIAKI YAMAMOTO et al, "Dynamic Behavior Analysis of Three Way Catalytic Reaction", JSAE 882072 - 882166 |
| | | |
| | | |

EXAMINER

DATE CONSIDERED

*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not consider. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.